MODIS sensor Working Group (MsWG) Summary September 15, 2004

Attendance: Stuart Biggar, Vincent Chiang, Roger Drake, Bob Evans, Chris Moeller, Junqiang Sun, Gary Toller, Eric Vermote, Zhengming Wan, Jack Xiong

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Scheduled Agenda

Item 1: L1B LUT delivery

Aqua V4.3.1.10 regular m1 update sent to DAAC on September 03.

Item 2: Instrument operation – Aqua MODIS nominal

Item 3: Instrument operation – Terra MODIS

(1) Terra science data lost on day 248 (9/4) starting approximately 02:00 due to a loss of sync during SSR palyback while Terra was in the SAA region at nighttime orbit. At about 07:44, the anomaly was resolved when K-band science downlink was re-established.

(2) On day 249 (9/5) at about 01:05 GMT, LWIR/PV band 29 detector 7 (product order) gain changed while Terra was in, again, the SAA region at nighttime orbit. The linear coefficient b1 increased about 2% and the noisy level of the detector also increased afterward.

JX) In the meeting package, pages 2-3 show the event of B29 Ch7 gain change and signal dn trending. The NEdT changed a little bit and is still less than the spec but it already stands out as an out-of-family detector compared to other detectors in Band 29. It turned out there was no DCR change for this detector when this happened. Page 4 shows B29 L1B image of that granule. The white line is the scan line when Ch7 changed the gain. After that, the image becomes smooth again that the scan-to-scan calibration algorithm should catch the b1 change.

Item 4: L1B collection 5 code changes – continued from last MsWG

(1) SWIR OOB correction using B25 or B28 for Terra?

CM) I looked at the nighttime B26 L1B data that Vincent sent me. To a large extent, either B25 or B28 SWIR correction will be ok. Band 28 correction has done more complete job on removing the leak, although Band 25 is not that bad either. Assuming zero radiance in B26 at night, I see a little negative radiance using B28 due to imperfection correction. On the other hand, I see a little positive radiance (~0.1%) if B25 is applied. We can keep B28 for the reprocessing and make some change down in the road if needed.

JX) I suggest that we stick with B28 since we knew it does a better job on the 5-micron leak correction since pre-launch. The idea of changing to B25 is because of increasing number of noisy detector in B28. For the reprocess, we will use B28 until we need to change to B25 in the future for the forward processing, then we can apply time-dependent LUT for that. In the mean time, we have the new code ready to take care of the noisy detector in case we need to switch the sending detector for the correction. This will be in collection 5 too.

GT) The new Terra L1B deadline for collection 5 is November 2 (changed from October 10). The new Aqua L1B deadline for collection 5 is November 11 (changed from January).

CM) I agree.

VC) Terra B28 correction is better for sub-km bands 5-7.

EV) I personally will not go with B25 correction either. However, can I get the B25 correction with B26 de-striping turned “ON”? Just for evaluation purpose.

JX) Vincent will coordinate with you on that offline.

CM) In the nighttime data I also saw some spatial offset feature (e.g. clouds) after the correction. Do we have any spatial offset in the correction?
JX) No, we do not have the offset. It has to be the electronic cross talk from other bands.
RD) The projection of the FPA on the ground for different bands will project differently, although everything will be co-registered later.

(2) L1B test for Band 21 mirror-side dependent b1
EV) I received one test granule for Terra and passed it to other people of the fire detection in our group. I did see very small difference in the data, but I will ask them to look at the data.
VC) Once we have the L1A data for Aqua, we will do the test and send to you.

Around the Table

Participant: Bob Evans – Terra collection 5 m1 and RVS

BE) I looked at Terra RVS and detector gain change from 03 to 04 data. The detector striping is very well addressed. Recently, for the SST, we started to match up Aqua with Terra. We will have chance to take a look at the IR bands in the upcoming weeks. Can MCST send us the Terra m1 for the reprocessing?
JX) Yes. Before the deadline of Nov 2, we can send you the Terra m1 and RVS for your testing. Probably in a few weeks.
BE) Mid October will be ok.

Participant: Zhengming Wan – L1B test using Terra DSM RVS

JX) We sent some test data to Dr. Wan. The difference is small for him except for the end of scan (EOS) for PC bands. He also looked at the differences of using detector dependent RSR and band average center wavelength. Do you think we can go ahead to use DSM RVS for Terra TEB reprocess?
ZW) Yes, I think DSM RVS can be used for collection 5. No significant difference using the DSM RVS in my products.
ZW) However, I saw some negative radiance in B21-23 in both version 4 and the test DSM RVS data sets. I suggest to set them zero. The detector dependent wavelength is not necessary. The differences are very small. I suggest to use band average center wavelength when convert radiance to brightness temperature. The scaling factor and offset are the same for the same band.
JX) We will look into the negative radiance issue. Currently, we keep negative radiances that are within NEdL. The TEB is calibrated detector-by-detector using detector dependent RSR in the L1B. This has been decided long time ago by science team. We do not provide the brightness temperature in L1B. The products are in radiances. Although the scaling factors are the same for 10 detectors in one band, each detector is calibrated by its own RSR.
CM) The calibration is spectral dependent. I would like to keep detector dependent RSR for flexibility. The current calibration is very good and has been working fine. I suggest not to change.
SB) I agree with that and do not want to change the calibration algorithm.
ZW) At least we should tell users the difference between those two. (All agree)
JX) We can provide that next time and put it online for the users

Participant: Stuart Biggar – Field campaign

Next MsWG meeting scheduled on September 29, 2004